Student Safety Orientation

Safety & Health Services Division

June 2011

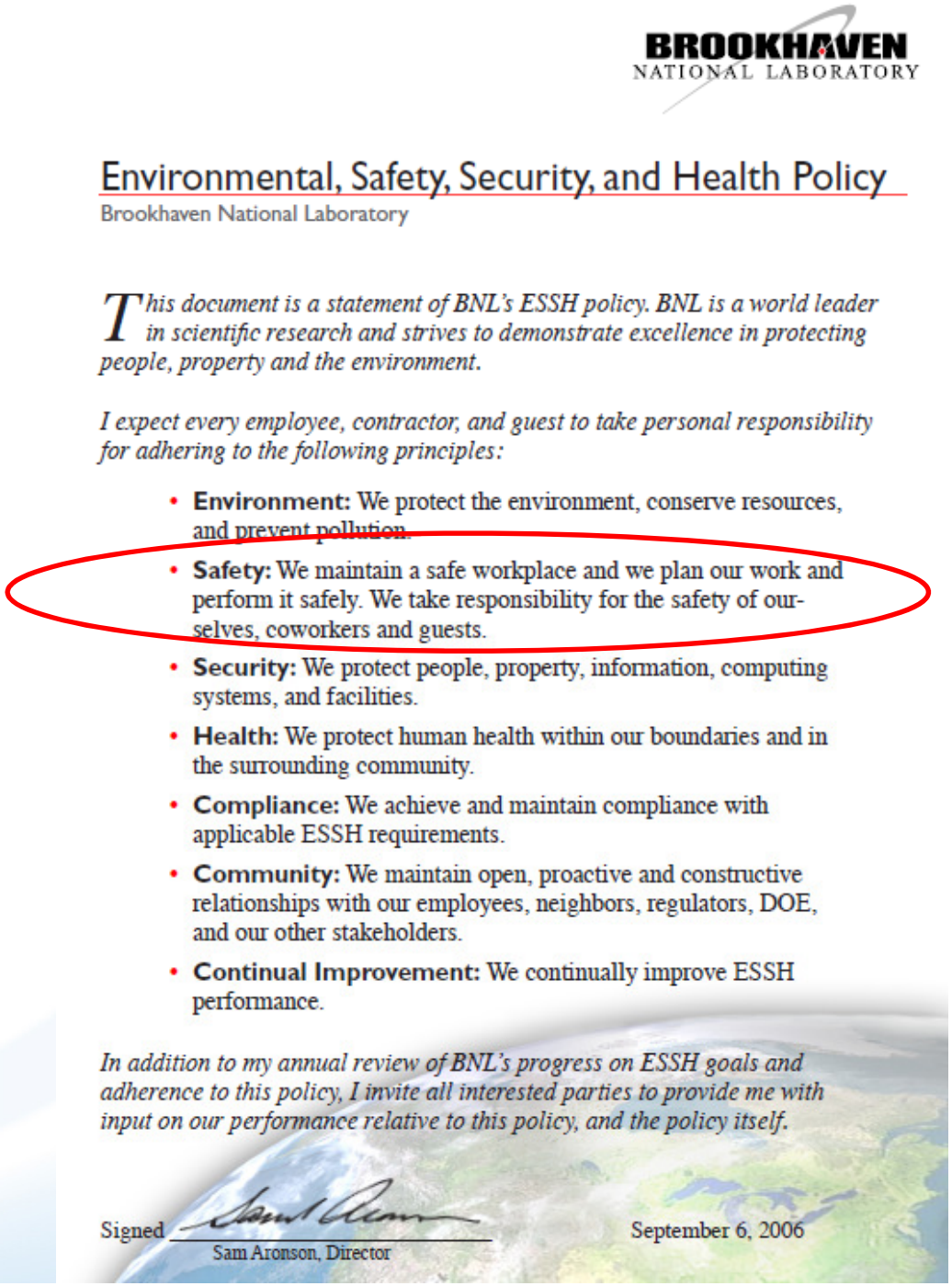
BROOKHAVEN NATIONAL LABORATORY

a passion for discovery

U.S. DEPARTMENT OF ENERGY | Office of Science

Safety Matters at BNL

- "Safety: We maintain a safe workplace and we plan our work and perform it safely. We take responsibility for the safety of ourselves, coworkers and guests."
- Safety Makes Science Possible!



BROOKHAVEN NATIONAL LABORATORY

Environmental, Safety, Security, and Health Policy

Brookhaven National Laboratory

This document is a statement of BNL's ESSH policy. BNL is a world leader in scientific research and strives to demonstrate excellence in protecting people, property and the environment.

I expect every employee, contractor, and guest to take personal responsibility for adhering to the following principles:

- **Environment:** We protect the environment, conserve resources, and prevent pollution.
- **Safety:** We maintain a safe workplace and we plan our work and perform it safely. We take responsibility for the safety of ourselves, coworkers and guests.
- **Security:** We protect people, property, information, computing systems, and facilities.
- **Health:** We protect human health within our boundaries and in the surrounding community.
- **Compliance:** We achieve and maintain compliance with applicable ESSH requirements.
- **Community:** We maintain open, proactive and constructive relationships with our employees, neighbors, regulators, DOE, and our other stakeholders.
- **Continual Improvement:** We continually improve ESSH performance.

In addition to my annual review of BNL's progress on ESSH goals and adherence to this policy, I invite all interested parties to provide me with input on our performance relative to this policy, and the policy itself.

Signed _____ September 6, 2006

Sam Aronson, Director

Be Safety Conscious

- Check for postings before entering areas
- Have a questioning attitude about things you do not understand.
- Be aware and cognizant of your surroundings.
- Watch out for one another—sometimes a second eye can avoid injury to a co-worker.

Student Injuries/Events at BNL

Date of Incident	Department	Incident Description	Incident Type
07/30/10	Office of Educational Programs	A visiting student's finger was lacerated by a beaker in a lab.	First Aid
06/01/10	Office of Educational Programs	A student injured a finger while hooking up hoses.	First Aid
05/05/10	Nuclear Science & Technology	A postdoc struck the top of her foot against the corner of a cart used to hold experimental equipment. Her wound was sutured at a local ER and the researcher returned to work regular duties.	This injury is not included in the BNL rates. This is for information purposes only.
04/24/10	Biology Department	A student was working on a Saturday and removing a tray from an oven and burned the left arm on the rack. A second degree burn was sustained.	This injury is not included in the BNL rates. This is for information purposes only.
06/04/09	Office of Educational Programs	A student lacerated a finger while handling a long glass tube.	First Aid
10/16/08	Medical Department	A student received a chemical burn on the right forearm.	First Aid
07/24/07	Office of Educational Programs	Student collaborator lacerated the palm of his left hand while removing a piece of broken glass from a glovebox.	First Aid
07/12/07	Community, Education, Government and Public Affairs	A high school student paricipating in a five-week summer program reported a burning sensation on the finger which may have been a result of an allergy to the nitrile gloves he was wearing.	First Aid

Student Injuries DO Occur!

Student Injuries/Events at Other Labs

Date of Incident	Incident Description	Outcome
August 13, 2010	An LLNL summer student was exposed to dilute acid solution.The student had just completed cleaning sample vials in preparation of an acid digestion process and was removing her personal protective equipment (PPE). Upon removing her gloves and lab coat, a small amount of liquid that was on the outside of the lab coat made contact with her right hand.	Emergency Room
April 3, 2009	At SLAC, a single refrigerated glass vial containing n-methyl formamide (NMF) and iron thiosulfate was removed from a liquid nitrogen dewar, and was placed on a desk, where it burst shortly thereafter. The rupture of the vial caused glass fragments to strike a researcher in the face, causing multiple lacerations.	Emergency Room treatment for facial and eye lacerations
May 10, 2005	At LANL, a Tritium Science Engineering (ESA-TSE) student received an electrical shock while conducting laboratory work involving a Lindberg split tube furnace (120v, 800 watt) housed within a fume hood.	Minor electrical shock

Student Injuries DO Occur!

Machine Shop Accident – April 2011

April 13, 2011

Location: Yale University Sterling Chemistry Laboratory Machine Shop **Injury: Death**

All information provided here is summarized from media accounts of the incident.

Description:

- Michele Dufault, a Yale undergraduate student, was working in a laboratory machine shop late at night finishing her senior research project.
- Apparently she had been working late on a number of occasions to finish before graduation.
- While working alone, it appears her long hair was caught in a lathe and she died due to asphyxia from neck compression. (Students under Yale policy are not to work unsupervised.)
- She was found at 2:30 a.m. by other students in the building who then called emergency services.
- Michele was trained in machine shop safety.

Causes: Currently under investigation. Possible issues include not using buddy system; no enforcement of Yale safety policy on oversight.

Potential Stressors: fatigue (2:30 a.m.), time crunch (finish senior project for graduation).

Lab Safety – Potential Hazards

- Time pressure (deadlines)
- Working alone
- Fatigue (Working late at night)
- Lack of familiarity with laboratory equipment
- Incomplete understanding of Work Process/Plan, including potential hazards
- Long hair, lanyards, and loose clothing when near rotating equipment
- Work in Machine Shops (students are not allowed)
- ***If in doubt, ask your supervisor/mentor.***

Housekeeping

- **Policy:** BNL strives to provide a safe and healthy environment for its staff, guests, contractors, and visitors. Good housekeeping reduces the likelihood of injuries & near-misses. Housekeeping is an integral part of every process, operation and task.

Housekeeping

What should I do?

- **Inspect** your area for clutter on a daily basis.
- **Wipe** work surfaces as instructed at least once daily.
- **Don't** leave a mess or let items collect, assuming someone else will clean it.
- **Maintain** an up-to-date inventory of chemicals and reagents.
- **Identify and clearly label** all chemicals and other materials.
- **Keep** eyewash, safety shower areas, fire sprinklers, and exits clear and accessible.
- **Do not** store chemicals/reagents in an unsecured location or where they can be spilled.
- **Before** departing from BNL, ensure your PI/Supervisor has taken possession of your chemicals.

Driving at BNL

- Obey the speed limit: **30 MPH.**
- Come to a **full** stop at stop signs.
- **Slow** down for slow-moving vehicles.
- **Stop** for pedestrians in crosswalks.
- Use **hands-free** electronic devices.
- BNL is a **no-texting-while-driving** zone.

You and your supervisor may be invited to meet with the Division/Department Head if you are ticketed.

Biking at BNL

- Helmets are required while biking onsite (you could get a ticket for not wearing one or asked to walk the bike)
  - Order a helmet through your department (Stock #K70310) or contact Safety and Health Services at x4056.

- Cyclists are required to obey the same rules as drivers:
  - Follow traffic
  - Stop at stop signs
  - Obey red lights
  - Observe right-of-way rules
  - No texting or talking on a cell phone while riding

- **Use** a light, head lights and tail lights (NY State Law) and reflective clothing when riding in dusk or darkness.
  - Reflective vests are available from the Safety and Health Services Division (x4056) or order Stock Item #H27736.

- **Give** pedestrians the right of way in crosswalks.

- **Be alert** for road hazards such as potholes, drains, and construction sites.

Personal Protective Equipment (PPE)

- ALL staff members, including students, are required to wear posted PPE, such as safetyt glasses, lab coats and covered shoes.

- Check placards outside of your work area for specific PPE requirements.
- For assistance, contact Safety and Health Services at x4056.
- For guidance, see the SBMS Subject Area, “Personal Protective Equipment” at https://sbms.bnl.gov/sbmsearch/subjarea/119/119_SA.cfm.

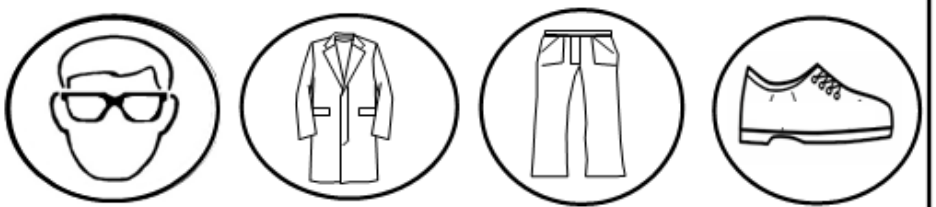
Example: Chemical Lab

HAZARD INFORMATION PLACARD/ EMERGENCY INFORMATION

Safety, Health & Environmental Information

Bldg:	Room: LAB (Chem)	Contact Information		
		Name	Work#	Cell/Home
Department/Division:		Primary:		
NO FOOD OR DRINK ALLOWED NO SMOKING	Rev Date: 11/30/10	Alternate:		
		Alternate:		

PROTECTIVE EQUIPMENT REQUIRED FOR ENTRY



SAFETY GLASSES | LAB COAT | LONG PANTS | FULLY ENCLOSED SHOE

HAZARDS OF THE AREA

TOXIC MATERIALS | CARCINOGEN/ MUTAGEN | REACTIVE & EXPLOSIVE | MAGNETIC FIELD ≥ 0.5 mT (5Gauss)

NANOMATERIALS | CORROSIVE SUBSTANCES | CRYOGENS

ADDITIONALINFORMATION

ISOLATION LOCATIONS FOR UTILITIES (IF APPLICABLE)

ELECTRIC:
GAS:
STEAM:
VENTILATION:

Proper Clothing

- Wearing proper clothing is essential and may prevent injury.
- Always check with your supervisor/mentor for local requirements.
- All personnel entering laboratory space should wear **long pants** and **closed toe shoes**.
- To avoid ticks and chiggers, avoid grassy or wooded areas and wear protective clothing (i.e., long pants).

Proper Footwear

ACCEPTABLE	UNACCEPTABLE	WHY?
		Openings in front and back
 *Leather or plastic, no cloth fabric surfaces*		Openings in front and back
		Openings in front and back
		Heel too high and insufficient coverage in front
		Heel too high and not a closed toe

Working Alone/After Hours

- Working alone (after 5 p.m. and on weekends) is strongly discouraged.

- If unavoidable, obtain Supervisor approval and verify that someone else is in the general area and is aware of your work with laboratory activities, including the location and duration of the work; or Notify the Safeguards and Security Division at x2238 of location, duration of work, and estimated time of departure.

What Should I Do In Case of an Accident or Injury?

- If an emergency, call Fire/Rescue at x2222 (631-344-2222 from a cell phone) or 911.
- If non-emergency, *regardless of how minor it seems at the time*, report the injury to your supervisor immediately.
- Seek medical attention at the Occupational Medicine Clinic (Bldg. 490, x3670). If the Clinic is closed (after hours), contact Fire/Rescue (Bldg. 599, x2222). Do not leave site without following this step.
- Report Near-Misses to your supervisor immediately.

Safety Resources

- Your Mentor/Supervisor
- BNL Safety Website: http://intranet.bnl.gov/safety/
- Your Dept./Division Safety and Health Representative
- Safety & Health Services Division (ext. 4056)
- Police and Fire/Rescue (x2222)
- Occupational Medicine Clinic (x3670)
- Safety Hotline (x8800)